

## Patent Claims

1. Process for the production of a plastics article with a microstructured surface via production of a composite composed of a backing layer composed of a thermoplastic or thermoelastic with one or more structure layers,
- characterized in that
- the structure layer(s) is/are composed of from 1 to 100% by weight of a polymethacrylate moulding composition which comprises from 80 to 100% by weight of free-radical-polymerized methyl methacrylate units and from 0 to 20% by weight of other comonomers capable of free-radical polymerization and which has an average (weight-average) molar mass  $M_w$  of from 30 000 to 70 000 g/mol
- and, where appropriate, is present in a mixture with up to 99% by weight of a polymethacrylate moulding composition which is composed of from 80 to 100% by weight of free-radical-polymerized methyl methacrylate units and from 0 to 20% by weight of other comonomers capable of free-radical polymerization and which has an average (weight-average) molar mass  $M_w$  of from 90 000 to 200 000 g/mol
- and the structure layer(s) obtain microstructuring via known structuring processes, after production of the composite.
2. Process according to Claim 1, characterized in that the plastic of the structure layer has a viscosity number ( $\eta_{sp/c}$ ) of from 25 to 50 ml/g, measured in chloroform to ISO 1628 Part 6.
3. Process according to Claim 1 or 2, characterized in that the composite of backing layer and structure layer is generated via coextrusion, application of the structure layer to the backing layer by lamination, or application of the structure layer to the backing layer by lacquering.
4. Process according to one or more of Claims 1 to 3, characterized in that the polymethyl methacrylate moulding compositions of the structure layer comprise, as other comonomers,  $C_1$ - $C_4$ -alkyl

(meth)acrylates, in particular methyl acrylate, ethyl acrylate or butyl methacrylate.

5. Process according to one or more of Claims 1 to 4, characterized in that the thickness of the structure layer is in the range from 1 to 1000  $\mu\text{m}$ .  
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6. Process according to one or more of Claims 1 to 5, characterized in that the dimensions of the geometries of the microstructures are in the range from 1 to 1000  $\mu\text{m}$ .  
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7. Process according to one or more of Claims 1 to 6, characterized in that the height:width aspect ratios of the microstructures are from 0.3 to 10.  
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8. Process according to one or more of Claims 1 to 7, characterized in that, after the discharge of a coextrudate composed of the melts of the backing layer and of the structure layer from the extrusion die of an extrusion system, the microstructures are embossed into the structure layer(s) in the molten state in an attached polishing-roller stack, by means of one or more embossing rollers.  
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9. Process according to one or more of Claims 1 to 7, characterized in that the microstructures are transferred via subsequent hot embossing into the previously solidified structure layer(s).  
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10. Process according to one or more of Claims 1 to 9, characterized in that the backing layer is composed of a polymethyl methacrylate plastic or of a plastic compatible with polymethyl methacrylate.  
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11. Process according to one or more of Claims 1 to 9, characterized in that the backing layer is composed of a plastic which is incompatible with, or has poor compatibility with, polymethyl methacrylate, but is equipped with (an) intermediate layer(s) which has been coextruded, laminated, or applied by lacquering, and which promotes adhesion.  
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12. Process according to one or more of Claims 1 to 9, characterized in that the backing layer is composed of a plastic which is incompatible with, or has poor compatibility with, polymethyl methacrylate, but is not equipped with any  
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intermediate layer which has been coextruded, laminated, or applied by lacquering, and which promotes adhesion, and, after the microstructure has been applied, the composite is separated in order to obtain the microstructured structure layer alone.

13. Plastics article which can be produced by a process according to one or more of Claims 1 to 12.
14. Plastics article according to Claim 13, characterized in that it is a composite composed of a backing layer and of one or more structure layers with microstructured surfaces.
15. Plastic according to Claim 13, characterized in that it is composed of a structure layer with a microstructured surface and can be produced according to Claim 12.
16. Plastics article according to one or more of Claims 13 to 15, characterized in that it is a simple sheet, a corrugated sheet, a panel having cavities, in particular a twin-web sandwich panel, a multiweb sandwich panel, or a lattice panel, or a tube or rod, the shape of which is angular or round, elliptical or oval.
17. Use of a plastics article according to any of Claims 13 to 16 for, or as, components with friction-reducing surfaces for the reduction of friction where air or water flows over surfaces of vehicles (aircraft, water-craft or land vehicles), or as lines and containers for the reduction of friction where fluids flow at high speeds in lines and containers, for the controlled mixing of fluids, for the production of surfaces with modified acoustic properties, for the production of micro- or nanotitre plates, for the reduction of adhesion of contaminants to surfaces requiring protection, as antimicrobial surfaces, as surfaces which direct light, conduct light, refract light and/or diffusely scatter light, and/or as antireflective or reflecting surfaces.